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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/620,261

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Meng Yao

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25453

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PATENT DOCUMENTATION CENTER

XEROX CORPORATION

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EXAMINER

MENBERU, BENIYAM

ART UNIT

PAPER NUMBER

2625

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/620,261	Applicant(s) YAO, MENG	
	Examiner Beniyam Menberu	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-11, 13-16 and 18-22 is/are rejected.
- 7) ☒ Claim(s) 6, 12, 17 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/17/06, 7/14/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "half-toning" (page 3, line 1) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5, 7, 11, 18, 21, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5929874 to Barton et al.

Regarding claims 1 and 7, Barton et al discloses a method of adjusting initial CMY data values comprising (column 7, lines 28-40):
determining a relative amount of chroma in the initial CMY/primary data values (column 8, lines 16-40; "color saturation"); and
producing color saturation adjusted CMY data values as a function of the relative amount of chroma in the initial CMY data values (column 8, lines 50-67; "new yellow" is adjusted value).

Regarding claims 5 and 11, Barton et al teaches all the limitations of claims 1 and 7 respectively. Further Barton et al disclose the method of claim 1 wherein determining a relative amount of chroma comprises calculating $(1 - \text{RATIO})$ wherein RATIO is a ratio between a minimum of the initial CMY data values and a maximum of the initial CMY data values (column 8, lines 15-25; column 9, lines 36-42; Color saturation is defined as $(\text{range}/\text{max}(c,m,y))$ where $\text{range}=\text{max}(c,m,y)-\text{min}(c,m,y)$;

Art Unit: 2625

so color saturation = $\frac{\max(c, m, y) - \min(c, m, y)}{\max(c, m, y)} = 1 - \frac{\min(c, m, y)}{\max(c, m, y)}$; so the

$$\text{RATIO} = \frac{\min(c, m, y)}{\max(c, m, y)}.$$

Regarding claim 18, Barton et al discloses a method of adjusting initial primary color data values(column 7, lines 28-40), comprising:

determining a relative amount of gray in the initial primary color data values (column 5, lines 65-67; column 6, lines 1-8);

determining a relative amount of chroma in the initial primary color data values (column 8, lines 16-40; "color saturation";);

for each of the initial primary color data values (column 7, lines 37-59; The correction can be applied to a color of choice.), adding a portion of the initial data value and a portion of a corresponding maximum color saturation adjusted value to produce respective color saturation adjusted primary color data values (column 8, lines 50-67; $\text{Yellow}_{\text{new}} = \text{Yellow}_{\text{old}} * (\text{MCF} + [\text{CS} * (1 - \text{MCF})])$, wherein CS is color saturation;

Rearranging this equation:

$$\begin{aligned} \text{Yellow}_{\text{new}} &= (\text{Yellow}_{\text{old}} * \text{MCF}) + (\text{Yellow}_{\text{old}} * \text{CS}) - (\text{MCF} * \text{CS} * \text{Yellow}_{\text{old}}) \\ &= (\text{Yellow}_{\text{old}} * \text{MCF}) * (1 - \text{CS}) + (\text{Yellow}_{\text{old}} * \text{CS}) \end{aligned}$$

The " $(\text{Yellow}_{\text{old}} * \text{MCF}) * (1 - \text{CS})$ " term represents a portion of a corresponding maximum color saturation adjusted value since MCF is maximum correction factor and a portion of the initial data value is represented by " $(\text{Yellow}_{\text{old}} * \text{CS})$ ".

Art Unit: 2625

); and

wherein the portion of the initial data value is a function of the relative amount of gray and the portion of the maximum saturation adjusted value is a function of the relative amount of chroma (Since both the portion of the initial data value and the portion of the maximum saturation adjusted value are both function of "CS" which is a measure of color saturation i.e. chroma.).

Regarding claim 21, Barton et al teaches all the limitations of claim 18. Further Barton et al discloses the method of claim 18 wherein determining a relative amount of gray comprises calculating a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values (column 5, lines 65-67; column 6, lines 1-9; column 8, lines 15-25; column 9, lines 36-42; Color saturation is defined as $(\text{range}/\max(c,m,y))$ where $\text{range}=\max(c,m,y)-\min(c,m,y)$;

so color saturation = $\frac{\max(c,m,y) - \min(c,m,y)}{\max(c,m,y)} = 1 - \frac{\min(c,m,y)}{\max(c,m,y)}$; Since Barton et al

teaches that color saturation is 1 minus grayness, therefore grayness must equal

$$\frac{\min(c,m,y)}{\max(c,m,y)}.$$

Regarding claim 22, Barton et al teaches all the limitations of claim 18. Further Barton et al discloses the method of claim 18 wherein determining a relative amount of chroma comprises calculating $(1 - \text{RATIO})$ wherein RATIO is a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values (column 5, lines 65-67; column 6, lines 1-9; column 8, lines 15-25;

Art Unit: 2625

column 9, lines 36-42; Color saturation is defined as $(\text{range}/\max(c,m,y))$ where

$\text{range} = \max(c,m,y) - \min(c,m,y)$;

so color saturation = $\frac{\max(c,m,y) - \min(c,m,y)}{\max(c,m,y)} = 1 - \frac{\min(c,m,y)}{\max(c,m,y)}$; wherein RATIO is

$$\frac{\min(c,m,y)}{\max(c,m,y)}.$$

4. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5539540 to Spaulding et al.

Regarding claim 13, Spaulding et al disclose a method of adjusting initial primary color data values (column 4, lines 13-18; column 6, lines 39-45), comprising:
determining whether the initial primary color data values are all zero;
determining whether the initial primary color data values are equal (column 8, lines 4-10; Neutral colors include colors where all color values are the same so that it will include the case of all zero values or all equal non-zero values); and
producing color saturation adjusted primary color data values if the initial primary color data values are not all zero and if the initial primary color data values are not equal (column 8, lines 8-16; column 9, lines 19-31; column 10, lines 33-46; Since box 106 works with only saturated colors, this will exclude all zero or all equal non-zero values as shown in Figure 12, step 106, 110).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 8, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5929874 to Barton et al in view of U.S. Patent No. 5181068 to Morikawa.

Regarding claims 2, 8, and 20, Barton et al teaches all the limitations of claims 1, 7, and 18 respectively. However Barton et al does not disclose the method of claim 1 wherein the initial CMY data values comprise gray balanced CMY data values.

Morikawa discloses wherein the initial CMY data values comprise gray balanced CMY data values (column 1, lines 60-67; column 2, lines 1-5).

Barton et al and Morikawa are combinable because they are in the similar problem area of color data processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the gray-balanced data of Morikawa with the system of Barton et al to implement gray-balanced color data processing.

The motivation to combine the reference is clear because Morikawa teaches that the UCR (Under color removal) data is based on a gray balance (column 1, lines 20, lines 55-67).

7. Claims 3, 9, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5929874 to Barton et al in view of U.S. Patent No. 6160912 to Usami.

Regarding claims 3, 9, and 19, Barton et al teaches all the limitations of claims 1, 7, and 18 respectively. However Barton et al does not disclose the method of claim 1 wherein the initial CMY data values comprise non-gray balanced CMY data values.

Usami discloses wherein the initial CMY data values comprise non-gray balanced CMY data values (Figure 3, steps s4, s6, s8; column 4, lines 16-45; The CMY in step s4 is before balancing.).

Barton et al and Usami are combinable because they are in the similar problem area of color data processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the non-gray balanced input of data of Usami with the system of Barton et al to implement non-gray balanced data input.

The motivation to combine the reference is clear because Usami teaches of an accurate image printing system (column 2, lines 30-41; column 3, lines 30-33).

8. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5929874 to Barton et al in view of U.S. Patent No. 5359436 to Dichter et al.

Regarding claims 4 and 10, Barton et al teaches all the limitations of claims 1 and 7 respectively. However Barton et al does not disclose the method of claim 1 further including gray balance adjusting the color saturation adjusted CMY data values.

Dichter et al disclose gray balance adjusting the color saturation adjusted CMY data values (column 1, lines 63-67; column 2, lines 20).

Barton et al and Dichter et al are combinable because they are in the similar problem area of color data processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the gray balancing system of Dichter et al with the system of Barton et al to implement gray-balanced output.

The motivation to combine the reference is clear because the system of Dichter et al maintains the gray balance (column 1, lines 38-45, 66-67; column 2, lines 11-15).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5539540 to Spaulding et al in view of U.S. Patent No. 6160912 to Usami.

Regarding claim 14, Spaulding et al teaches all the limitations of claim 13. However Spaulding et al does not disclose the method of claim 13 wherein the initial primary color data values comprise non-gray balanced primary color data values.

Art Unit: 2625

Usami discloses wherein the initial primary color data values comprise non-gray balanced primary color data values (Figure 3, steps s4, s6, s8; column 4, lines 16-45; The CMY in step s4 is before balancing.).

Spaulding et al and Usami are combinable because they are in the similar problem area of color data processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the non-gray balance input data with the system of Spaulding et al to implement non-gray balanced input of data.

The motivation to combine the reference is clear because Usami teaches of an accurate image printing system (column 2, lines 30-41; column 3, lines 30-33).

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5539540 to Spaulding et al in view of U.S. Patent No. 5181068 to Morikawa.

Regarding claim 15, Spaulding et al teaches all the limitations of claim 13. However Spaulding et al does not disclose the method of claim 13 wherein the initial primary color data values comprise gray balanced primary color data values.

Morikawa discloses wherein the initial primary color data values comprise gray balanced primary color data values (column 1, lines 60-67; column 2, lines 1-5).

Spaulding et al and Morikawa are combinable because they are in the similar problem area of color data processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the gray balance input of Morikawa with the system of Spaulding et al to implement gray balanced input.

The motivation to combine the reference is clear because Morikawa teaches that the UCR (Under color removal) data is based on a gray balance (column 1, lines 20, lines 55-67).

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5539540 to Spaulding et al in view of U.S. Patent No. 5359436 to Dichter et al.

Regarding claim 16, Spaulding et al teaches all the limitations of claim 13. However Spaulding et al does not disclose the method of claim 13 further including gray balance adjusting the color saturation adjusted primary color data values.

Dichter et al disclose gray balance adjusting the color saturation adjusted primary color data values (column 1, lines 63-67; column 2, lines 20).

Spaulding et al and Dichter et al are combinable because they are in the similar problem area of color data processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the gray balancing system of Dichter et al with the system of Spaulding et al to implement gray-balanced output.

The motivation to combine the reference is clear because the system of Dichter et al maintains the gray balance (column 1, lines 38-45, 66-67; column 2, lines 11-15).

Allowable Subject Matter

12. Claims 6, 12, 17, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Prior Art Cited

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6084689 to Mo discloses printing with saturation adjustment.

U.S. Patent No. 7042521 to Kim discloses saturation correction system.

U.S. Patent No. 5452017 to Hickman discloses color adjustment system.

U.S. Patent No. 6665434 to Yamaguchi discloses color adjusting system for images.

U.S. Patent No. 5966222 to Hirata et al disclose saturation adjustment of images.

U.S. Patent Application Publication No. US 2002/0005965 A1 to Nagae et al disclose image processor.

U.S. Patent No. 6823083 to Watanabe et al disclose saturation adjusting system.

U.S. Patent Application Publication No. US 2005/0213125 A1 to Smith et al disclose color value adjusting system.

U.S. Patent Application Publication No. US 2002/0122190 A1 to Harrington discloses color/colorant conversion.

U.S. Patent No. 5861896 to Barton et al disclose saturation dependent adjustment of printing data.

U.S. Patent No. 5231504 to Magee disclose color printing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beniyam Menberu whose telephone number is (571) 272-7465. The examiner can normally be reached on 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571) 272-7314. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (571) 272-2600. The group receptionist number for TC 2600 is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

Art Unit: 2625

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov/>.

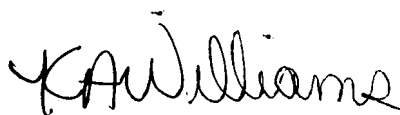
Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner

Beniyam Menberu

BM

05/11/2007

A handwritten signature in black ink, appearing to read "KAWilliams".

KIMBERLY WILLIAMS
PRIMARY PATENT EXAMINER